Installation & Operating Instructions
Westlock Quantum 3600 (ALUMINIUM & STAINLESS STEEL)
With Mechanical Switches, Inductive Proximity Sensors or MAGNUM Proximity Switches.

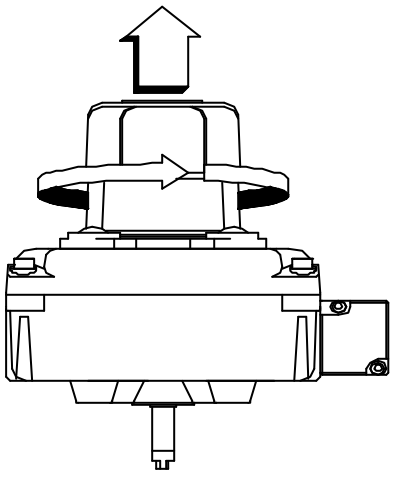
PRODUCT CERTIFICATION.

0539 II 1 GD T85°C

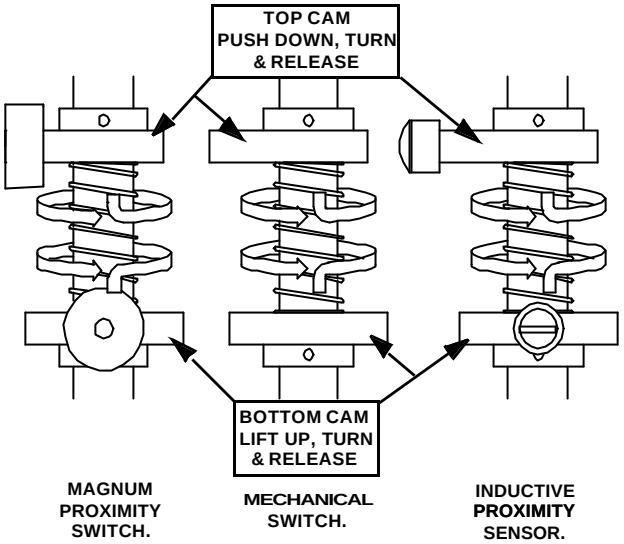
EEx ia IIC T6
DEMKO 03 ATEX 133287X

This product is designed for use in intrinsically safe systems when connected through the correct barriers.

1. Attach the correct mounting bracket and adapter to the Quantum housing with the hardware provided.
2. Operate the actuator to full closed position.
3. Attach the Quantum and mounting bracket to the actuator.
4. Remove screws/open latches which fasten the Quantum cover. Twist cover approximately 45° and lift up.



5. To set switches, lift the bottom cam and turn until the switch has activated and then release. The spring will push the cam back onto the splined shaft. Stroke the actuator to the opposite end and push down on the top cam and turn until the open switch has activated.
6. Operate actuator from one end of stroke to the other several times to check switch operation.



FIELD WIRING & INSTALLATION.

WARNING: The Quantum should always be handled with care when the cover is removed and wired to an electrical power source.

7. The correct wiring diagram for the product is shown on the inside of the Quantum cover. Please follow carefully.
8. Field wiring must be carried out in accordance with site, local and National Electrical Codes.
9. The ground wire should be secure under the green screw.
10. The cerification applies to equipment **without** cable glands. When mounting the enclosure in the hazardous area, **only** suitably certified cable glands and blanking elements must be used to maintain ingress protection of IP67.
11. **All** unused cable entries **must** be plugged with suitably certified plugs that can maintain an ingress protection level of IP6X.
12. The above mention switches,sensors and coils shall be electrically connected suitable to the rated data via a certified isolating interface/ zener barrier placed outside the hazardous area.
13. For ambient temperatures below -10°C and above +60°C, use field wiring suitable for **both** minimum and maximum ambient temperatures.

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Nomenclature for type 36_ _ _

A Aluminium Enclosure.
S Stainless Steel Enclosure.

5 Unit with 1-4 V3 SPDT Mechanical Switches.
7 Unit with 1-4 Inductive Proximity Sensors.
9 Unit with 1-4 Magnum XT-90 Proximity Switches SPDT.

4 Unit with Beacon Indicator.
6 Unit without Beacon Indicator.

V3 SPDT mechanical switches and Magnum XT-90 proximity switches are considered as simple apparatus can be replaced by inductive proximity sensors.

ELECTRICAL ENTITY PARAMETERS.

MAGNUM PROXIMITY SWITCH - SIMPLE APPARATUS
Ui=30V, Ii=100mA, Pi=3W, Ci=10nF, Li=10µH

V3 MECHANICAL GOLD PLATED - SIMPLE APPARATUS
Ui=30V, Ii=100mA, Pi=3W, Ci=10nF, Li=10µH

NJ2-V3-N P&F SENSORS
Ui=16V, Ii=25mA, Pi=34mW, Ci=40nF, Li=50µH

I/S COIL
Ui=31V, Ii=670mA, Pi=2.98W, Ci=0nF, Li=0µH

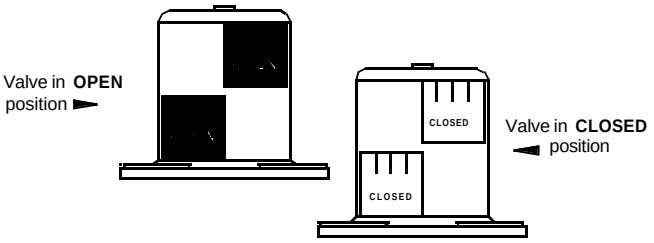
13. Replace the enclosure cover ensuring that the position of the valve has been noted, either fully open or fully closed.

14. Make sure that the Beacon visual display indicator coinsides with the position of the valve.

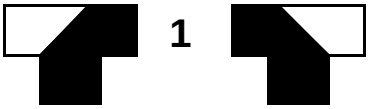
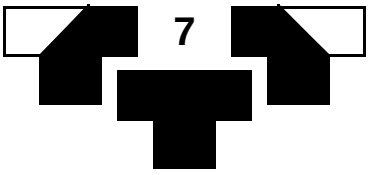
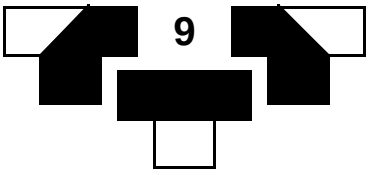
SPECIAL CONDITIONS FOR SAFE USE.

The Control Monitor shall be marked with the following warning:
'STATIC DISCHARGE HAZARD,CLEAN ONLY WITH DAMP CLOTH'.
When metallic cable glands are used, the applicable earthing requirements of EN 50014 must be complied with.
When installing the Control Monitor ensure good enginnering practise / correct installtion techniques are used.

Conventional 90° Beacon indication For ON / OFF Valves.



THREE WAY VALVE BEACON INDICATION (WHEN SPECIFIED) STANDARD FLOW ARRANGEMENTS

PART NO.	ARRANGEMENT NUMBER
90° ROTATION	
BM3-1	 1
BM3-3	3
BM3-5	5
180° ROTATION	
BM3-7	 7
BM3-9	 9

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Operating and Maintenance Instructions for Falcon Solenoid Valve

General Description

The Falcon solenoid valve incorporates elastomer static seals through which a shaped spool moves and are manufactured for 3 or 4 way operation. 3 way is normally used for pilot control of the other relay valves or for the operation of single acting cylinders. 4 way is normally used to control the action of double acting cylinders.

The seal spacer assembly forms individual annular chambers opposite each valve port and the grooved spool either closes or allows flow between adjacent chambers, hence the position of the spool determines which ports are open or closed.

The spool is moved by way of a manually or mechanically operated mechanism normally against a return spring. Operation may be by application or removal of a pilot air supply acting as a pilot piston. This form of control is utilized for electrical actuation where integral solenoid valves control the pilot air supply.

Optional Features

N - No-Voltage Release (Latching)

With the coil first energized, the palm button is then manually moved and latched. The inward movement of the palm button causes the valve to shift. When the coil is de-energized, the palm button and latching mechanism are automatically tripped, allowing the valve to return to its original position. (1.2 Cv Valves only) See Fig. 1

R - No-Voltage Release (Non-Latching)

With the coil first energized, the palm button is then manually moved. The inward movement of the palm button causes the valve to shift. When the coil is de-energized, the palm button automatically returns to its original position. (1.2 Cv Valves only) See Fig. 2

L - Manual Locking Override

Manually depress palm button and rotate clockwise for maintained condition, must manually disengage to return to original position. See Fig. 3

M - Momentary Override

Spring return momentary pushtype, must hold in to actuate. See Fig. 4

H - Hex Drive Maintained Override

Insert allen key in hex head screw and rotate clockwise (4-5 turns) to shift spool. Valve will stay put until hex head screw is rotated counter clockwise (4-5 turns) back to original position. See Fig. 5

E - External Pilot

The 1/8" NPT external pilot connection requires a separate auxiliary pressure line to the valve. This feature should be used when the controlled pressure is below the minimum 45 psi operating pressure.

D/C - Dual Coil Option

Four way valves are available with a coil/pilot valve on each end of the Falcon valve, coil 'A' and coil 'B'. When coil 'A' is energized the valve will shift. If coil 'A' is then de-energized, the valve will remain in this position. **The valve will not return to the original state until coil 'A' is de-energized and coil 'B' is energized.** The process is the same for coil 'B'.

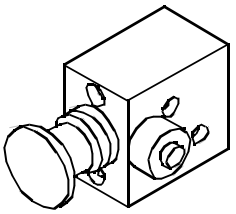
Figure 1

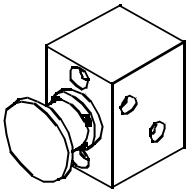
Figure 2

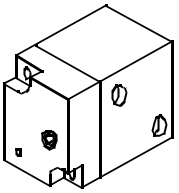
Figure 5

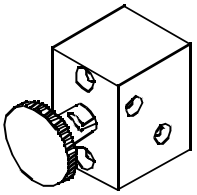
Figure 3

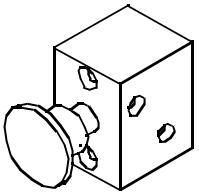
Figure 4

NOTES - For Dual Coil Valves

1. The valve may be in either position upon installation. Refer to the Air Flow Diagrams and energize the appropriate coil (with air) to reset valve to the desired position.

2. Dual coil valves require both an electrical signal and air pressure to operate. See Air Flow Diagram for air pressure requirements. If either or both inputs are lost the valve will remain in it's current position.

3. Both coils should never be energized simultaneously.

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Specifications

Operating Pressure:	45-120 PSIG
Operating Temperature:	-20°C to +65°C
Operating Media:	Non Lubricated Filtered Air to 20 Microns

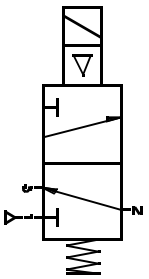
Field Wiring

Complete the electrical wiring in accordance with local and National Electrical Codes. The ground wire should be secure under the green screw. Check all screws for tightness. If the installation is in a hazardous area, all electrical leads must be sealed with an approved compound, in accordance with local and National Electrical Codes unless the switches are hermetically sealed. (NEC 5051-5)

Always check the nameplate to make sure the approval ratings coincide with the application.

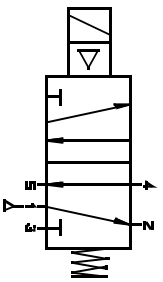
CAUTION: To prevent ignition of hazardous atmospheres, replace cover before connecting the electrical circuits. Keep cover tightly closed when in operation.

(Air Line) Designation
1/4" NPT air ports for inlet, outlet, and exhaust
(3.5 Cv valve has 1/2" NPT air ports)



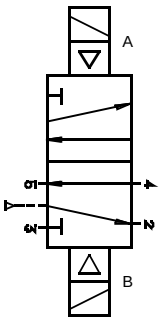
Spring Return Valve

Description of Operation: Solenoid De-energized - air flows from Outlet Port 2 to Exhaust Port 3. Solenoid Energized - air flows from Inlet Port 1 to Outlet Port 2.



Spring Return Valve

Description of Operation: Solenoid De-energized - air flows from Inlet Port 1 to Outlet Port 2 and exhausts from Port 4 to Port 5. Solenoid Energized - air flows from Inlet Port 1 to Outlet Port 4 and exhausts from Port 2 to Port 3.



Dual Coil Valve

Description of Operation: Coil B De-energized - air flows from Inlet Port 1 to Outlet Port 2 and exhausts from Port 4 to Port 5. Coil A Energized - air flows from Inlet Port 1 to Outlet Port 4 and exhausts from Port 2 to Port 3.

(Air Line) Installation Considerations

Air Mains and lines should be large enough to avoid excessive pressure loss under conditions of maximum flow. Air lines should be installed with as few restrictions as possible if the cost of compressed air is to be kept to a minimum. Sharp turns in piping should be avoided for more effecient air flow and economical air power. It is advisable to pitch the mains in the direction of air flow so that both gravity and air flow will carry the water to traps or water legs located at frequent intervals.

To help in preventing condensed moisture from reaching the point of usage, down pipes should never be taken directly from the bottom of air pipes or mains. Connection should be made at the top of the main and a long radius return bend used.

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AIR FLOW

Pipe sizes are normally determined on semi empirical lines, basis for selection being an acceptable pressure drop e.g. not more than 10% of the applied pressure. In sizing pipes, consideration should be given to likely future demands, as a system will be inefficient if the demand outgrows the supply. It is always better to over size mains as this will reduce air velocity and make water separation more effective.

AIR SERVICE EQUIPMENT

The importance of proper filtration (20 Micron) and lubrication of the air supply to pneumatic equipment can never be over-emphasized as a means of decreasing friction and preventing corrosion and wear due to moisture and abrasive solids being present in the air supply. At higher pressures than recommended, pneumatic equipment can wear excessively with no significant increase in output and compressed air is consequently wasted.

There is much to be gained, therefore, from providing pneumatic equipment with serviced air by including suitable air line filters, pressure regulators and lubricants in the installation.

TUBES AND FITTINGS

The use of copper,stainless steel, nylon or polyethylene tube is recommended for piping up air circuits and equipment. As a general rule, pipe threaded fittings should not be assembled to a specific torque because the torque required for a reliable joint varies with thread quality, port and fitting materials, sealant used, and other factors. The suggested method of assembling pipe threaded connections is to assemble them finger tight and then wrench tighten further to a specified number of turns from finger tight. The assembly procedure given below is for reference only, the fitting should not be over tightened for this will lead to distortion and most likely, complete valve failure.

1. Inspect port and connectors to ensure that the threads on both are free of dirt, burrs and excessive nicks.
2. Apply sealant/lubricant or Teflon tape to the male pipe threads. With any sealant tape, the first one or two threads should be left uncovered to avoid system contamination.
3. Screw the connector into the port to the finger tight position.
4. Wrench tighten the connector aproximately 1 - 2 turns (to seal) from finger tight. again this is only reference - the fitting should **NOT** be over tightened.

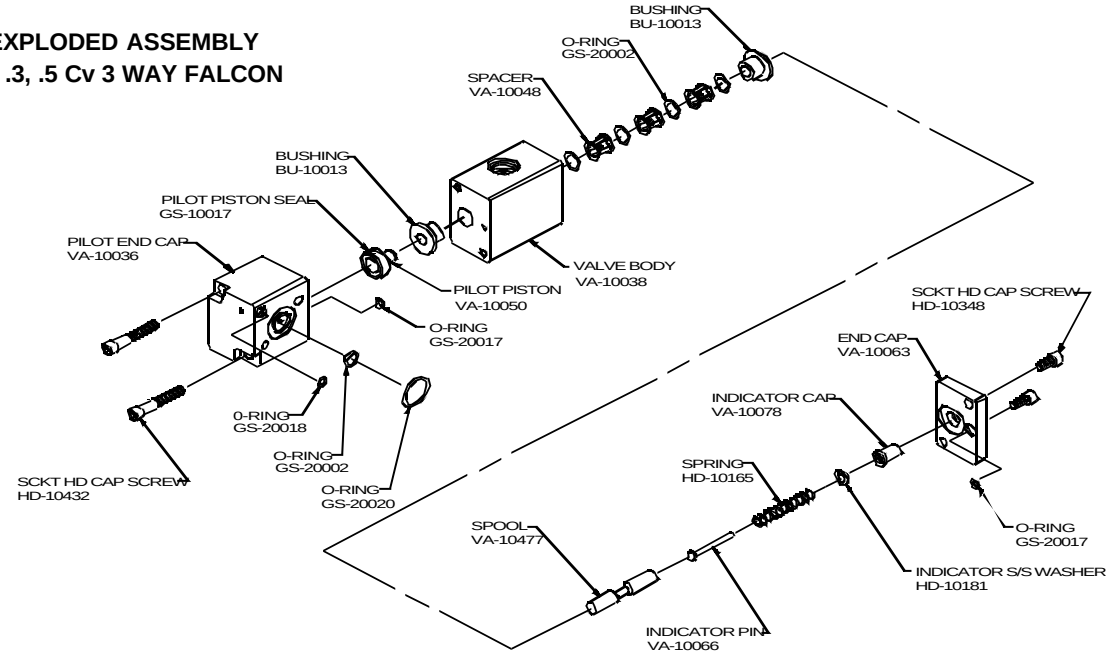
SPECIAL NOTICE

Delrin valve bodies are fitted with hellicoils therefore an extra effort should be made **NOT** to overtighten pipe fittings or retaining screws (.5 - 1 turns from finger tight to seal). Overtightening will result in valve failure or pull hellicoils from valve body.

MAINTENANCE

Routine maintenance is usually confined to the periodic replenishment of Dow Corning III lubricant or equivalent to spool and spring.

EXPLODED ASSEMBLY OF .3, .5 Cv 3 WAY FALCON



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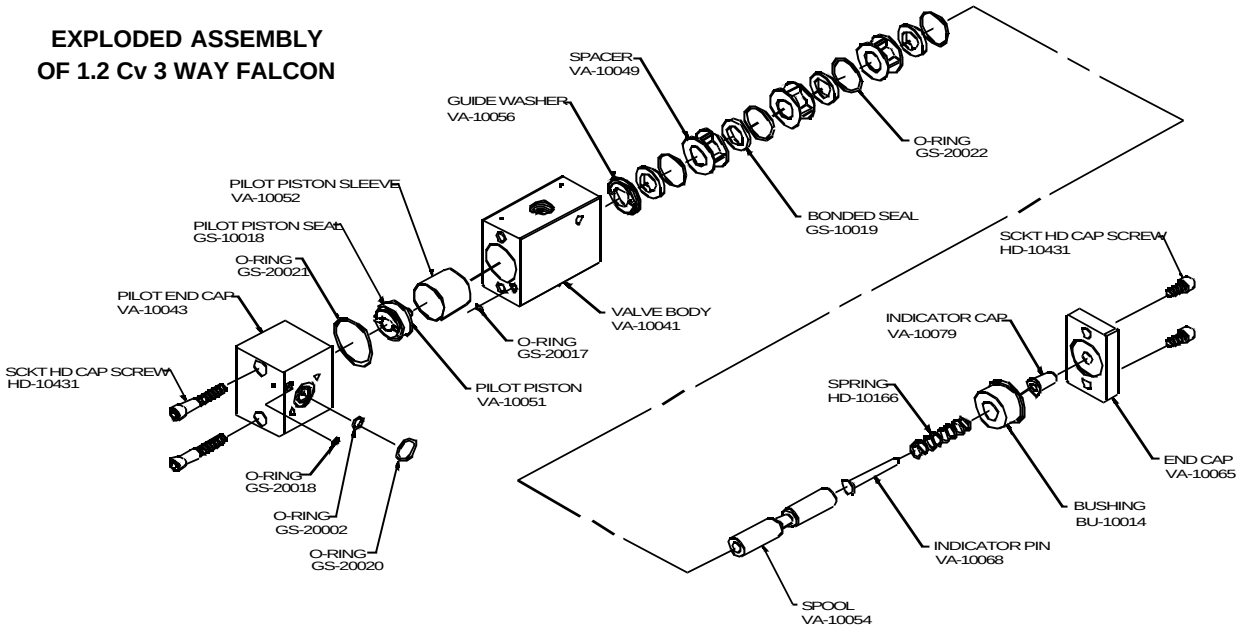
EXPLODED ASSEMBLY
OF 1.2 Cv 3 WAY FALCON



Solenoid Valve & Coil Specification.

Type: ☐ 3/2 WAY ☐ 5/2 WAY

Cv: ☐ 0.5 ☐ 0.7 ☐ 1.1 ☐ 1.2 ☐ 3.5

Material: ☐ Alu. ☐ Brass ☐ St.St ☐ Delrin

Connection: ☐ 1/4" NPT ☐ 1/2" NPT ☐ 1/4" BSP

Operating Pressure Range: 45 - 120 PSIG

Orifice Size: 1/4" (0.5 to 1.2 Cv) 1/2" (3.5 Cv)

Supply Voltage: ☐ 24 VDC